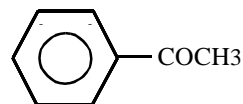


## ACETOPHENONE

Acetophenone is a federal hazardous air pollutant and was identified as a toxic air contaminant in April 1993 under AB 2728.

CAS Registry Number: 98-86-2

Molecular Formula: C<sub>8</sub>H<sub>8</sub>O



Acetophenone is a colorless, slightly oily liquid with a sweet, pungent orange blossom or jasmine-like odor. It has a bitter aromatic flavor. Acetophenone is soluble in acetone, benzene, alcohol, chloroform, ether, fatty oils, and glycerol. It is slightly soluble in water (HSDB, 1991). Acetophenone forms laminar crystals at low temperatures and is flammable (Merck, 1989; Sax, 1989).

### Physical Properties of Acetophenone

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Synonyms: Dymex; ketone methyl phenyl; acetylbenzene; benzoyl methide;  
methyl phenyl ketone; 1-phenylethanone

Molecular Weight:	120.16
Boiling Point:	202 °C
Melting Point:	20.5 °C
Flash point:	105 °C (221 °F) (closed cup)
Vapor Density:	4.14
Vapor Pressure:	0.44 mm Hg at 25 °C
Density/Specific Gravity:	1.033 at 15/15 °C
Log/Octanol Water Partition Coefficient:	1.58
Henry's Law Constant:	1.07 x 10 <sup>-5</sup> atm-m <sup>3</sup> /mole at 25 °C
Conversion Factor:	1 ppm = 4.91 mg/m <sup>3</sup>

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(HSDB, 1991; Howard, 1990; Merck, 1989; U.S. EPA, 1994a)

## SOURCES AND EMISSIONS

### A. Sources

Acetophenone is found in emissions from vehicular exhaust, waste incineration, and residential fuel oil, and coal combustion. It is also found in the vaporization of certain perfumes (HSDB, 1991).

The primary sources of acetophenone emissions reported in the United States Environmental Protection Agency's (U.S. EPA) 1995 Toxics Release Inventory (TRI) Public Data Release Report were the primary metal industries (U.S. EPA, 1996b).

Acetophenone was registered for use as a pesticide, however as of December 31, 1991, it is no longer registered for pesticidal use in California (DPR, 1996).

#### B. Emissions

Approximately 18,000 pounds of acetophenone emissions in California were reported in the U.S. EPA 1995 TRI Public Data Release Report (U.S. EPA, 1996b).

#### C. Natural Occurrence

Acetophenone is found in oils of the following plants: *Labdanum*, *Stirlingia latifolia*, *Urtica dioica*, *Elsholtzia argyi* var. *nipponica*, *Elsholtzia ciliata*, in various species of orthodon, in *Castoreum absolute*, and in the buds of balsam poplar (HSDB, 1991).

### AMBIENT CONCENTRATIONS

No Air Resources Board data exist for ambient concentrations of acetophenone. However, the U.S. EPA has compiled information from two United States urban locations that reported a maximum ambient concentration in 1977 to 1978 of 0.30 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) or 0.06 parts per billion (ppb) with a mean concentration of 0.15  $\mu\text{g}/\text{m}^3$  or 0.03 ppb (U.S. EPA, 1993a).

### INDOOR SOURCES AND CONCENTRATIONS

No information about the indoor sources and concentrations of acetophenone was found in the readily-available literature.

### ATMOSPHERIC PERSISTENCE

Acetophenone is likely to exist in the vapor phase in the atmosphere because of its vapor pressure. The calculated half-life of acetophenone due to its gas-phase reaction with hydroxyl radical is estimated to be 3.7 days (Atkinson, 1989). Wet deposition may be important for removal of atmospheric acetophenone because of its significant water solubility. Oxidation by other oxidants and photolysis do not appear to be as important for the removal of acetophenone in the atmosphere (Howard, 1990).

### AB 2588 RISK ASSESSMENT INFORMATION

Acetophenone emissions are not reported from stationary sources in California under the AB 2588 program. It is also not listed in the California Air Pollution Control Officers

Association Air Toxics “Hot Spots” Program Revised 1992 Risk Assessment Guidelines as having health values (cancer or non-cancer) for use in risk assessments (CAPCOA, 1993).

## **HEALTH EFFECTS**

Probable routes of human exposure to acetophenone are inhalation, ingestion, and dermal contact (U.S. EPA, 1994a).

**Non-Cancer:** Exposure to acetophenone vapor may cause skin irritation and transient corneal injury. Oral exposure can cause central nervous system depression, hematologic effects, and weakened pulse in humans. Inhalation exposure may produce respiratory depression, and shortness of breath. Aspiration may result in chemical pneumonitis (HSDB, 1991).

The U.S. EPA is currently reviewing the Reference Concentration (RfC) for acetophenone. The U.S. EPA has established an oral Reference Dose (RfD) of 0.1 milligrams per kilogram per day. They estimate that consumption of this dose or less, over a lifetime, would not result in the occurrence of chronic, non-cancer effects (U.S. EPA, 1994a).

No information is available on adverse reproductive or developmental effects in humans from exposure to acetophenone. In one study of pregnant rats exposed dermally, no adverse effects on reproductive function or development were noted (HSDB, 1991; U.S. EPA, 1994a).

**Cancer:** No information is available on the carcinogenic effects of acetophenone in humans or animals. The U.S. EPA has placed acetophenone in Group D: Not classifiable as to human carcinogenicity (U.S. EPA, 1994a). The International Agency for Research on Cancer has not classified acetophenone with respect to potential carcinogenicity (IARC, 1987a).

